REMARKS/ARGUMENTS

Favorable reconsideration and allowance of the present application are respectfully requested in view of the following remarks. Claims 1-14 remain pending. Claims 1 and 6 are independent.

Claims 1-14 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Wright (U.S. Publication No. 2002/0008578). Applicant respectfully traverses.

An aspect of the present invention is directed toward a training method for a power amplifier pre-distorter formed by a FIR filter structure, in which the FIR filter structure includes individual look-up tables for the filter taps. This is reflected in independent claim 1 which recites "wherein the FIR filter structure includes an individual look-up table for each filter tap." Each look-up table represents a discretized memory polynomial.

A non-limiting exemplary pre-distorter including exemplary FIR filter structure of the invention is illustrated in Fig. 7 of the disclosure. As seen, complex input signal $x(n)$ is provided to a first absolute value block 10 which outputs an absolute value signal $|x(n)|$, which is then provided to a look-up table LUT0 representing a sampled version of polynomial T_0. *Disclosure, p.6, equation (2).* The corresponding (generally complex) value output from look-up table LUT0 is forwarded to the multiplier 12, where it multiplies the input signal sample $x(n)$.

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The input signal $x(n)$ is also forwarded to a delay block D, where it is delayed by one or several sample periods. Output of the delay block D is a delayed sample signal $x(n-1)$. This delayed sample is processed similarly to the non-delayed sample by corresponding absolute value block 10, multiplier 12 and a look-up table LUT1. The output of the absolute value block 10 is now the delayed absolute value signal $|x(n-1)|$ which is then provided to the look-up table LUT1. The look-up table LUT1 now represents a sampled version of polynomial T_1 instead of T_0. As illustrated in FIG. 7, further delays and look-up tables may be included. Finally, the obtained products are added to each other in adders 14 to form the pre-distorted signal PD(n).

Assuming two look-up tables, a training method in accordance with an aspect of the present invention is based on the observation that the look-up table that compensates for memory effects typically has much smaller elements than the look-up table that compensates for non-linearities. This makes it possible to easily determine a first approximation of this dominating look-up table by neglecting the other table. This approximation can in turn be used to determine a first approximation of the table compensating for the memory.

These features are reflected in independent claim 1, which recites in part "determining a first estimate of a first look-up table assigned to a first filter tap, assuming a second look-up table assigned to a second filter tap is set to predetermined table values" and "determining a second estimate of the second

look-up table, assuming the first look-up table is set to the determined first estimate."

Wright does not teach or suggest these features due to the simple fact that Wright does not have "the FIR filter structure includes an individual look-up table for each filter tap", as required by claim 1. Wright only discloses a common lookup table 52H. *Wright, e.g., Fig. 3.* Since there are no individual look-up tables for each filter tap in Wright, there is no "first look-up table assigned to a first filter tap" and no "second look-up table assigned to a second filter tap". Consequently, Wright cannot teach or suggest "determining a first estimate of a first look-up table assigned to a first filter tap, assuming a second look-up table assigned to a second filter tap is set to predetermined table values" and "determining a second estimate of the second look-up table, assuming the first look-up table is set to the determined first estimate" as recited in claim 1.

Ding does not correct this deficiency of Wright. Contrary to the assertion made in the Office Action, the pre-distorter in Ding does not include, for each filter tap, a look-up table representing a discretized polynomial in a variable representing the signal amplitude. Instead Ding has to recalculate the memory polynomials for each new input signal amplitude. Ding does describe individual parameters for each filter tap (referred to as "Pred-Core" for predistortion core circuit, *Ding, c.4, ll.44-47*). However, Ding is silent regarding any training method. Indeed, in the example given in columns 12 and 13, the

parameters a_{kp} are constants. Simply put, there are no lookup tables to train in Ding.

Since Ding does not disclose "wherein the FIR filter structure includes an individual look-up table for each filter tap" and Wright is also deficient, the combination of Wright and Ding cannot disclose or suggest "determining a first estimate of a first look-up table assigned to a first filter tap, assuming a second look-up table assigned to a second filter tap is set to predetermined table values" and "determining a second estimate of the second look-up table, assuming the first look-up table is set to the determined first estimate." This is sufficient to distinguish claim 1 from Wright and Ding.

Ding's deficiency actually goes further. Examiner points to *c.2, ll.31-53, c.4, ll.5-8 and ll.44-67* in Ding as allegedly disclosing the FIR structure that includes look-up tables. These portions describe the Pred-Core circuit 200 which can include a coefficient lookup table or a polynomial generator 202. However, the Pred-Core circuit 200 is entirely separate from the FIR memory filters.

In Figs. 3A, 3B, 4A and 4B, the outputs of the Pred-Core circuits 200-k are provided to the FIR equalization filters 312, 412. *Ding, c.5, ll.27-30; c.8, ll.64-67.* In Fig. 5, memory FIR filter 505 generates an output $x_m(n)$ applied to the index input of the Pred-Core circuit 200-1, and in Fig. 6, complex memory FIR filters 612-1, 612-2 are included. The Pred-Core circuits 200 are separate from these FIR filters.

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Ding is silent regarding whether the memory FIR filters themselves have lookup tables. Even if it is assumed the memory FIR filters in Ding include lookup tables, it is clear that each filter tap is not provided its own memory FIR filters.

In conclusion, even if Wright is combined with Ding, independent claim 1 is still distinguishable. For similar reasons, independent claim 6 is also distinguishable over Wright and Ding. Claims 2-5 and 7-14 are distinguishable over Wright and Ding by virtue of their dependencies from independent claims 1 and 6 as well as on their own merits.

Applicant respectfully requests that the rejection of claims 1-14 be withdrawn.

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. Should there be any outstanding matters that need to be resolved, the Examiner is respectfully requested to contact Hyung Sohn (Reg. No. 44,346), to conduct an interview in an effort to expedite prosecution in connection with the present application.
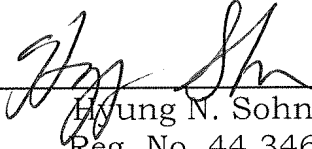
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The Commissioner is authorized to charge the undersigned's deposit

account #14-1140 in whatever amount is necessary for entry of these papers

and the continued pendency of the captioned application.

Respectfully submitted,

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